

*Dendrobates tinctorius*  
(2 White morph variants).

# AMERICAN DENDROBATID GROUP

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*Ectotherm Scientific*

## STATEMENT OF PURPOSE

The purpose of the American Dendrobatid Group (ADG) is to educate enthusiasts and distribute information on all aspects of Dendrobatid husbandry and captive propagation. To develop better communication between Dendrobatid breeders and other frog breeders. The ADG is also interested in the maintenance and propagation of Mantellid frogs, Atelopid toads, and other unusual frogs and toads. This Newsletter appears four times a year at a cost of \$15.00 per calendar year. Back issues are \$3.00 each, or on a yearly basis: 1992 is available for \$5.00; 1993 and 1994 for \$10.00/year, and 1995 for \$12.50, and 1996 for \$15.00.

Subscriptions, comments, articles, photographs, etc. should be sent to Charles Powell (2932 Sunburst Dr., San Jose, CA 95111 Tel.: (408) 363-0926). Fax: (408) 972-2182. E-mail: powell12@Ave.net

## Notes from the Editor

This is the start of the sixth year for the American Dendrobatid Group Newsletter. Every year I try and add something new or change the look of the Newsletter. This year the Newsletter looks pretty much the same but the content has been changed. Two new columns appear for the first time in this issue. The first, by Ken Uy, is designed to acquaint people new to the hobby of keeping poison frogs with what is involved. It will discuss everything they need to know to set up terrariums, breed food items, acquire the frogs and then successfully keep them. The second new column is called "Veterinary Note," written by Brian Monk, a future veterinarian in his last year at the Virginia-Maryland College of Veterinary Medicine in Blacksburg, Virginia. It will deal with various aspects of the veterinary care of our charges. Any questions concerning the medical aspects of captive amphibian husbandry can be addressed to The American Dendrobatid Group. A third new column will premiere in the next ADG issue. It will deal with subjects discussed on FrogNet, an internet discussion group started by Anthony Hundt which deals with poison frogs, Atelopids, and Mantellids.

The main article for this issue deals with a small toad that is commonly imported into the pet trade from Argentina. It is closely related to the Atelopids and it is hoped that by keeping and breeding this species some insight will be gained into how to keep and breed Atelopids. Atelopids have proved to be extremely difficult to acquire in the US and also hard to breed.

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## MELANOPHRYNISCUS STELZNERI IN THE TERRARIUM

Alex Sens

*Melanophryniscus stelzneri* is a small, hardy toad, akin to the true atelopids and native to Argentina and Southern Brazil. Its dorsum is black, typically with several pale yellow blotches; in some individuals the back is entirely covered with small yellow

flecks. The toad's underbelly and hands are bright red. *Melanophryniscus stelzneri* may be reliably sexed by size: females grow to about 1" and are slightly larger and much more robust than males.

This *Melanophryniscus* has proved an excellent long-term captive. I keep my small group, which was acquired in 1994, in a small front-opening terrarium (12"x15"x12"). As a substrate I use slabs of treefern fiber, which are kept only slightly moist; a small amount of standing water around the edges of the slab allows the toads access to moisture when they need it. The toads are native to rather arid areas, and humidity should therefore be kept very low except when breeding is being attempted. For plants I use philodendrum runners and a small bromeliad (*Guzmania*); the toads seem to like to hide in the axils of the latter. Although they are unable to ascend smooth surfaces like glass, the toads will readily climb up the treefern covering the back of their terrarium, or on to plants.

*Melanophryniscus stelzneri* habitat in southern South America is relatively cool. I therefore keep my toads at room temperature (typically 66-72F), without any supplementary heat. In the winter the temperature regularly reaches the low 60s; the toads have suffered no ill effects. In the summer, the temperature rises into the 80s and sometimes higher for short periods without affecting the toads adversely. I have successfully bred the toads in both seasons.

*Melanophryniscus* do not seem to be territorial and do well in groups if provided with sufficient food. I feed mine a standard dendrobatid diet: dusted fruitflies (both *D. hydei* and *D. melanogaster*), pinhead crickets, and flour beetle larvae. My toads' red bellies appear to have dulled over time in captivity, and in the near future I will be experimenting with various additives to see if I can recover their original brilliant color. Watching the toads eat can be very entertaining: although it is capable of running fairly quickly, *M. stelzneri* typically "walks" up to its prey slowly and deliberately, and often seems to study it for some time before devouring it.

I have had good success at getting my toads to lay eggs and at raising up the tadpoles. I have bred the frogs both in the winter, when the ambient temperature averaged about 66-68 F, and in the summer, when it was far higher. In nature the toads breed explosively, emerging in large numbers to spawn in puddles after heavy rain storms. Nevertheless, a single pair is sufficient for breeding in captivity. I keep the toads dry for several weeks and feed them heavily. When the females show signs of being gravid—they get almost as wide as they are long—I place a single pair in a small breeding chamber. For this, I use a ten gallon aquarium. I cover the bottom of this with pea gravel and create a sloping bank so that the toads, which swim only poorly, can have ready access to the land section. I put a few aquatic plants (I have used many different types) and some dead spagnum moss in the water section as oviposition sites. The first time I bred the animals, I used a small circulating pump buried in the gravel to force water through a perforated piece of aquarium "Bubblewall" to create rain, but I have discovered that an increase in humidity and water level is sufficient to induce breeding. Now I simply bury a small circulating pump in the gravel under the land section and cover the tank with a piece of plastic wrap. These steps raise the humidity to the point of saturation.

Under such conditions, male *Melanophryniscus* produce a short, high-pitched, trilled peeping call and aggressively attempt to mount any animal they encounter. Typically, the pair will go into amplexus within 1-5 days of being placed in the breeding chamber. In each of my breeding attempts, eggs have been laid within 12 hours of the initiation of amplexus. The female swims around the water section with the male on her back, and ejects strings of eggs (typically 5-25 per strand). These may simply lie on the substrate or be attached to plants and moss. My females have generally laid about 150-200 small eggs at a time. Once spawning is complete, I remove the toads from the

chamber and allow the eggs to develop in situ.

The eggs will hatch in about 48 hours. Tadpoles initially lie on the substrate, then attach themselves to aquatic plants or the sides of the tank. At this time I transfer them to an unheated aquarium with several inches of aged tap water and numerous plants. The tadpoles like to nibble on plant matter, including dead sphagnum, and thrive on algae wafers. Half of the water is changed every 48 hours. Under good conditions, they grow very quickly, and metamorphosis can occur in as little as three weeks, though more typically it takes about 4-5 weeks. At the time of metamorphosis, the froglets are incredibly small-only a few millimeters long-and resemble small black beetles, with the same deliberate walking style as their parents.

I have had great difficulties successfully rearing the froglets, which require a large amount of very tiny food in the form of leaf lice, springtails, and the like. This makes it advisable to breed the toads during months when such foods are more readily available. Those toadlets that do get enough food grow quickly, and can handle *Drosophila melanogaster* after about a month. At this time, they will begin to acquire the yellow dorsal blotches that characterize the adults. I am hopeful that in the future I can overcome the difficulty of raising large numbers of very tiny toadlets by finding suitable sources of substantial amounts of small food.

*Melanophryniscus stelzneri* makes an attractive and hardy addition to any frog collection. If the difficulty of raising the toadlets can be overcome, it is also easy to breed.

## **BEGINNER'S COLUMN**

### **Vivarium design options for Dendrobatid Frogs - Ideas gleamed from FrogNet**

Ken Uy <kenuy@earthlink.net>

Providing the proper environment for the frogs should be the first priority for anyone planning to care for these animals. This series of articles is designed to illustrate the many variations of vivarium design that the members of FrogNet have shared on the Internet.

There are many types of cages used to house Dendrobatids. They range from plastic shoe boxes to glass or acrylic cases with front openings. Each type has advantages and disadvantages, but all work for the purpose they were designed for.

The most common container used is the all-glass aquarium with a sliding screen top. This type of cage is commonly available in different sizes and dimensions at a reasonable price and are usually well-designed as far as keeping the frogs securely contained is concerned. Remember that Dendrobatids have rather strict moisture requirements and any escapes will more than likely dry up and die. Most of these cages have snugly fitting lids that can be held shut with some type of screw knob. The screen top may be partially covered with glass or acrylic sheets or even plastic wrap to maintain humidity within the aquarium. The aquarium itself has the advantage of being made of chemically inert materials, namely glass and silicone cement. This is an important consideration because frogs are able to absorb toxins through their skin, especially in a moist environment. Also the aquarium is easily cleaned and sterilized if need be to prevent the spread of disease. It is also easy to add dividers to create aquatic portions using more glass panels and silicone. One disadvantage with all-glass aquariums is that it can be difficult to drill drainage holes in the bottom glass because many of them have tempered glass bottoms. It can be done with special tools and with a lot of care, but most people

have neither the skill nor equipment to do so. Another disadvantage is the weight of these containers, especially when they are fully equipped with substrate, water and plants. A sturdy shelf or table is required, especially if the completed vivarium is a large one. Glass aquariums can also break very easily if carelessly handled. Also, the screen tops of many commercial vivariums are not fine enough to keep in the food insects that commonly used for the frogs.

A number of hobbyists use plastic storage containers with some success. These shoe or sweater boxes are readily available and cheap, are lightweight and easily drilled or modified. Unfortunately, not all plastics are created equal, and some containers have been implicated in frog deaths. Tadpoles and newly-morphed froglets seem to be the most susceptible to toxins leached from the plastics. Once the frogs are past the morphing stage and can be kept drier, there is less risk of toxic reactions in these containers. Storage containers also have the disadvantage of not being aesthetically pleasing as display vivariums. They are usually translucent as opposed to clear, and the shapes and sizes they come in usually limits their use to housing mostly terrestrial frogs which require more floor area than height. For housing large numbers of frogs, though, these containers can be quite convenient.

Perhaps a better choice would be acrylic aquariums. These have the advantages of being lightweight, virtually unbreakable, easily modified and readily available. They usually cost more than glass tanks, but one can sometimes get them quite cheaply from pet shops that are closing down or being remodeled. They do not come with screen tops, but a suitable lid can easily be installed. In fact, these tanks can be lain on their backs and the top faced front and fitted with a removable glass or acrylic panel. This is another advantage over top-opening containers; one does not need to remove light fixtures to access the vivarium interior, and the front which is now the top can easily be drilled, routed, or hack-sawed to provide ventilation openings which can be covered with fine mesh. Acrylic also allows UV light to pass through, which some keepers consider to be important for the frogs. Acrylic is also a better insulator than glass, which may be important in situations where supplementary heating is required for individual vivariums. The major disadvantage with using acrylic is that it scratches easily. This may not be so much of a problem with frogs because they do not have claws, but cleaning the viewing sides of the vivarium will have to be done with care. One can overcome this by using a sheet of glass for the front panel as suggested above, since it is usually recommended to cover the back and sides anyway to provide the frogs with a sense of security.

With some practice, it is possible to build one's own acrylic vivarium. It is certainly easier and safer for most people to handle than glass. One does need a special acrylic solvent to glue the panels together because the silicone used for glass aquariums does not bond as well with acrylic. On the other hand, within reasonable bounds, the design is only limited by the type and amount of acrylic one has access to.

Still uncommon in the United States is the so-called Euro-tank which is a vivarium which opens from the front rather than from the top. The front opening makes the interior of the vivarium more accessible, especially if it is taller than it is long as recommended for the more arboreal frogs. Strategically placed ventilation holes allow air circulation that minimizes fogging of the front pane. This type of design is one of the best for display vivariums because of the ease in decorating the interior and maintaining the live plants that may be grown inside. Unfortunately, this type of tank is not yet widely available in the U.S. and one often has to resort to designing and building one's own, but that's part of the fun.

All these types of containers have been proven to work. Some work better than others, depending on what their primary function is. The important things to remember are: they must keep the frogs and food insects in, they must allow some sort of control for heat and humidity and they must allow easy access and observation of the frogs.

The next article in this series will deal with the types of substrates commonly used in Dendrobatid frog vivariums.

## **VETERINARY NOTES**

### **Parasites**

Brian Monk

A parasite, technically speaking, is any organism that lives on or within a host organism, and causes harm to that host while carrying on the basic functions of its own life. Many types of parasites exist, from plants to fish. However, the most common parasites are generally either protozoans from a few genera, or metazoans, usually “worms.” Most people think of parasites as being in the digestive tract, but they can inhabit any organ or tissue of the body. Parasites exist in just about every species of organism on this planet. Even parasites have parasites! They are common and natural, but not always good.

Some parasites require more than one host to complete their life cycles. They may use an insect as an intermediate host for part of their development, and as a way to be passed on to the primary host where they reproduce. Tapeworms are a good example of a parasite that needs a secondary host. Other parasites have a more succinct life-cycle, and are directly infective to the primary host, either as eggs or as immature organisms. These types of parasites are represented by the hookworms and roundworms, and many types of protozoal parasites.

Parasites are one of the most common afflictions of captive frogs, whether they are wild-caught or captive bred. They can also be one of the most devastating. All wild frogs have a parasite load ... that is, a population of various parasites. These parasites in a normal, healthy, wild frog do not present a problem. The frog is adapted to its parasite load. In other words, the damage that these parasites create is compensated for by the frog.

A problem occurs when a wild frog is brought into captivity. Try as we might, the captive environment is stressful, and frogs take time to establish themselves in their new homes. Unfortunately, the parasite load has not diminished, and the added stress is sometimes enough to make a formerly healthy frog decompensate or “de-adapt” from this parasite load. A state of disease results, as the frog is no longer able to compensate for the damage done by the parasites. What we see as keepers is a normal healthy frog that for some reason becomes sluggish, lethargic, and starts to lose weight in spite of a good appetite. Sometimes “worms” are passed in the feces. In some cases, the cloaca become prolapsed outside of the frogs body as a result of straining during defecation or irritation caused by the parasites. It is important to note that many animals may already be displaying these symptoms by the time we have obtained them from the dealer.

Directly infective parasites can be devastating to captive populations of frogs. As the parasites continue to produce offspring or eggs, these infectious stages build up in the enclosure and reinfect the frogs, producing a cycle that may result in a extremely high parasite load which the frogs

cannot adapt to. Good sanitation of the enclosed cage is highly recommended.

The most common parasites that a veterinarian sees are nematode worms of various types. Hookworms, roundworms, and pinworms are probably the most commonly encountered parasites of frogs. Other less common (but no less dangerous) parasites are flatworms (flukes), pentastomid worms (actually a type of arthropod), arrow-head worms, tapeworms, lungworms, and various protozoans (including amoebae). For some of these parasites, detection and/or treatment is difficult.

In general, a veterinarian will check for parasites by making a suspension of feces and sugar solution, and then cover the vial with a slide so that it touches the suspension. The parasite ova will float to the top, and can be checked for microscopically. Direct smears of feces are also examined, particularly for protozoans. Some parasites do not produce eggs that appear in the feces, and some parasites only shed eggs intermittently, so these tests are by no means absolutely correct all of the time.

In general, parasites should be dealt with before they become a real problem. This means prophylactic treatment and/or quarantine!! Prophylactic treatment should consist of two doses of an anti-parasitic drug given one to two weeks apart. The most common broad-spectrum anti-parasitic compounds used by veterinarians in this country are fenbendazole (Panacur®) and ivermectin (Ivomec®). Although these two drugs have a broad range of doses and a relatively safe, accurate dosing for small frogs is recommended and emphasized. Transdermal administration is possible, but should fall within the ranges of safe dosages. I cannot recommend to anyone the liberal application of a drug to a frog's back.

Quarantine means isolating the frogs from other frogs and their future environment for a set period of time. This should be minimally thirty days, preferably in a situation where fecal samples can be monitored. An easy way to do this is to house the frogs in a plastic storage container with a substrate such as moist paper towels. Feces can easily be collected, and the towels can be changed often. Prophylactic treatment should be done while the animals are in quarantine.

Established frogs that start to develop problems maintaining weight or appear "sick" should have at least one (preferably three) fecal exams run on fresh feces, to rule out GI parasites as a potential diagnosis.

In conclusion, parasites are a definite problem encountered by anyone who keeps frogs. They are naturally occurring, and almost all wild-caught frogs have a parasite load. The stress of captivity may cause frogs to "de-adapt" and the parasite load may lead to a sick frog. Basic prophylaxis, quarantine, and sanitation are effective means of preventing parasite problems in both wild-caught and established frogs.

### **SPECIES INFORMATION**

Gerd Voss of the IGF has put together a questionnaire on various aspects of keeping and breeding poison frogs. The results of one of these questionnaires is presented here.

If you keep and breed any poison frog please take the time to fill out the questions presented here for the frogs you keep so we can produce captive care and breeding guidelines for all the various frogs in our care. Send your information to either the Newsletter Editor (Charles Powell, 2932 Sunburst Dr., San Jose, CA 95111-2264) or Gerd Voss (Am Heerweg 19, D-30900 Bissendorf, Germany).

## *Minyobates minutus* by Bern Pieper

### Physical description

Average size of female: 12 to 15 mm.

Average size of male: 11 to 14 mm.

How to identify males from females: Not easy, males a little smaller.

Typical color morph: Black/brown basic color with some orange, coppery dorso-lateral stripes, blue on the belly.

Other color morphs:

Maximum size of tadpoles: Without tail 6-7 mm.

Call: Similar to cricket.

### Biotype and distribution

Distribution: Panama (Dorien to el Valley) and northwest Columbia.

Biotype: Found in forest leaf litter in rain forests between 100 m and 700 m.

Population density: 1 pair/m<sup>2</sup>

Relative humidity during dry season: About 80%.

Temperature range: 5°.

Rainy season: January to March

Are the frogs sitting in sunlight: Prefer open spaces but not in direct sunlight.

When is their active time: Morning and evening, 7 AM to 11 AM and 3 PM to 5 PM.

What kinds of food do they find: Ants, mites, springtails, and small fruit flies.

### Vivarium

Recommended dimension: At least 30 x 30 x 30 cm.

Terrarium landscaping: Bottom with java moss, roots, leaves, and stones.

How often do you simulate rain: For 10 seconds, two to five times a day for.

Lighting: 30 watts.

Adult population density: Five to six pairs per 40 x 40 x 40 cm terrarium.

Average age in terrarium: Seven years minimum.

Maximum age in terrarium:

Behavior - outgoing or reclusive: Outgoing when food present.

### Breeding

Eggs/clutch: One to two, rarely three.

Where are they placed: Between leaves

Sensitive to light: no

Development time for eggs: 15 to 20 days.

Development time for tadpoles: 50 to 60 days.

Food for tadpoles: Fish flake food

Tadpoles kept singly or in groups: Singly.

Are F1 different from wild caught parents: No.

## ANNOUNCEMENTS

**American Frog Day.**—The Third American Frog Day has been scheduled for September 6th from 9 AM to 4 PM. It will be held again this year at First Assembly of God Church, 801 Hellyer Ave.,

San Jose, California 95111. If you are interested in giving a talk, selling frogs, plants, etc. or just want information, contact Charles Powell (2932 Sunburst Dr., San Jose, CA 95111-2264. Tel.: (408) 363-0926; Fax: (408) 972-2182; E-mail: powell2@Ave.net).

**Atlanta Botanical Gardens has success breeding poison dart frogs.**—Staff at the Atlanta Botanical Gardens have successfully breed *Dendrobates histrionicus*, the harlequin poison dart frog, a notoriously difficult-to-breed species. The discovery this month [November 1996, ed.] of the baby frogs marks the first breeding of the species in an open conservatory setting, and one of a few known captive breeding successes.

The Garden's permanent exhibit, Poison dart frogs of Central and South America, has attracted much attention since opening in September 1995. The frogs are so named because they secrete toxins through their skins which have been used by native people to tip hunting darts. In captivity, the frogs lose their ability of produce the toxins due to changes in their diet.

About a dozen species of active, brilliantly-colored frogs are displayed behind glass in the lobby of the Dorothy Chapman Fuqua Conservatory. The harlequin frogs, however, roam free in the Tropical House where they are raising their babies in bromeliads, vase-shaped tropical plants that hold water. Sharp-eyed visitors may spot the adults, which are vivid orange with black venation.

Harlequin frogs, which are native to Ecuador and Colombia, are challenging to breed in part because they are obligate egg feeders, meaning the female must lay additional eggs for the developing tadpoles to eat. The female deposits the eggs on the surface of the leaf. Upon hatching, the tadpoles are carried by the parents on their backs to a suitable place to develop, such as the vases of bromeliads. The female visits each tadpole daily, depositing a feeder egg near each one. The young take about a year to mature.

"This is a great accomplishment for our curator of tropicals, Ron Gagliardo, who cares for our collection of poison dart frogs," said Ron Determann, Fuqua Conservatory superintendent. "They are obviously thriving in the conditions he has created for them."

Garden staff have also bred two generations of another dart frog species, *Epipedobates tricolor*. These are not egg feeders, and the tadpoles mature in small ponds in the Tropical Rotunda.

Garden visitors not fortunate enough to spot the new parents can enjoy seeing their relatives in the terrariums during regular Conservatory hours, Tuesday - Sunday from 10 A.M. to 6 P.M. The Garden is located on Piedmont Ave. Between Monroe Dr. and 14th St. Admission is \$6 adults, \$5 seniors, \$3 students and free for children under six and Garden members. For more information, call (404) 876-5859.

(Press release Atlanta Botanical Gardens, November 18, 1996).

**Dutch Frog Day.** Dendrobatidae Nederland, the Dutch society for keepers of Dendrobatid frogs presents: The 18th International Frogday, Saturday May 24 1997.

Location: Social Cultureel Centrum "De Twee Marken", Trompplein 5, Maarn, the Netherlands  
The Dutch Frog Day is the oldest and biggest frog day in the world. It is huge and visited by 1,00's of hobbists. There are many rare and unusual species for sale. Also for sale are plants, vivariums and other hobbist equipment. You can refer to ADG #23 for an article on Dutch Frog Day written by Timothy Stabb. Frogfriends, the tradition continues! This Spring the Eighteenth International Frogday will take place. In view of the positive experience we had in previous years we chose once more for Social Cultural Centre "De Twee Marken" in Maarn. Again you can expect a wonderful



program with videos and slide-shows and, of course, various sale- and information stands. For more information contact Marcel van der Weijden, Papaverzijde 27, 8255 JM Swifterbant, The Netherlands. telephone: +321-323002; e-mail: M.vdWeijden@RIZA.RWS.minvenw.nl. See you May 24th!

**German Frog Day.** The 400 members of the IGF from Germany, Holland, Denmark, Sweden, Belgium, Switzerland, Austria, Spain and Hungaria will celebrate their next German Frog Day on April 12th and April 13th in Weibersbrunn near Frankfurt. Saturday at 10 AM will start with sales of frog related materials, plants, books etc. At 1 PM starts the sale of all kinds of live food and at least 30 different kinds of poison frogs (100's of individuals. At 5 PM slides shows and video shows of frogs in the wild and the biotypes in which they live will be shown. Finally at 7 PM a dinner will be served. The following day, Saturday, the event starts with a slide show and talks at 9 AM and we finish up by 11 AM. Many members stay at the Brunnenhof Hotel which has a over 100 beds at prices from \$26 to \$55/bed/night (breakfast included). For more information contact For further information contact: Gerd Voss (IGF), Am Heerweg 19, D-30900 Bissendorf/Germany. Telefax: Country code + 0511 774059; E-mail: Gerd\_Voss@msn.com;

**Poison frogs in Connecticut?** By Barbie Marks. "I am a newcomer to the ADG, and I'm thrilled with the Newsletter and it's wealth of information. But, I really need help!

"In my home state of Connecticut, the possession and sale of poison frogs is illegal. I plan to petition the state to try and reverse this. Recently, a local herp-business owner was successful in spearheading a move which once again legalized the sale of turtles in Connecticut (turtles were banned for many years because of the possible transmission of Salmonella). I have been in contact with her and I'm seeking her legal/political expertise on the poison frog front.

"What I need from all of you - it'll just take a few minutes - is for you to write me a letter telling about your positive experiences with poison frogs, and how safe these herps actually are (especially as captive breed). I need as many as possible, and if you breeders out there have business stationary, it would probably have more impact if it was printed on that. I know this is a monumental undertaking - that's why I need lots of help. A lot of people are herp-phobic for the wrong reasons, and with the work 'poison' in the animals name it can be as bad as yelling 'shark' at the beach. We know they are safe to own, but I have to convince lots of people who know nothing about these amazing little creatures and are put off by the 'p' word.

"Also if anyone knows of any documented fatalities or illnesses directly related to handling poison frogs I need to know about that too (don't want the opposition giving me any surprises!). If anyone can provide information (or where to get it) the lessening of toxicity in captivity or on the pharmacological properties of poison frog toxins that data would be critically important.

"Most important, if anyone has been involved in a project like this, HELP ME! I could really use the advise of those who have been there. Thank you all so much in advance for any assistance you can offer. I'll keep the Newsletter posted on the progress of this effort."

Barbie Marks (578 Savin Ave., 2B, West Haven, CT 06516 Tel.: (203) 934-5905.

**United European Dendrobatid Research Society** - Tony Packer (29 Tiber Gardens, Islington, London, N1 OXE, England) has recently published his first Journal. Subscription rate is £16 outside of England and Europe. Write him for information.

## HELPFUL HINTS

**New Live Food Source** - I found a new source for live food. LFS Cultures (P. O. Box 607, University, MS 38677) was started around the tropical fish business, just send them a letter requesting a price list. LFS Cultures sells live foods such as algae, daphnia, *Drosophila* (vestigial), duckweed, infusoria, microworms, grindal worms, and others. What makes LFS different is their offer on re-culturing *Drosophila* vials; return 20 vials (uncleaned) and they will return them re-cultured for \$20. Their services could be useful for people that do not like to culture their own *Drosophila* or have an emergency situation. I would be interested in hearing results from people who use some of their live foods for feeding tadpoles. Contact me by e-mail at jlewis@ccil.net or by the postal service at John Lewis (717 Bromley Rd., Bromley, KY 41017).

**Fruit Fly Trap** - The second 'Helpful hint' comes from Daniel Meulemans and is for the design of a little trap for those pesky fruit flies that get out of the frog tanks. "We make a cool little *Drosophila* trap when we have big escapes in the lab. Get a small cup or vial and put in a nice rotten banana. Sprinkle it with a little baker's yeast. Then make a little paper funnel by cutting out a piece of construction paper or filter paper in a semicircle, roll it into a tight cone and tape it leaving a small opening at the pointed end (about the diameter of two flies).

"Then put the cone in the cup, pointed down, and seal it on with tape. You probably get the idea by now. The flies go after the banana, climb down the cone and get trapped in the cup. It works best if you make several of these and completely wrap up all other available food sources. Fruit flies are not very bright."

**Home-made *Drosophila* culture recipe** - This 'Helpful hint' comes from Tony Packer in England who is now publishing the United European Dendrobate Research Society Journal (for more information see Announcements, above). He states that vestigial-winged fruit flies do great on a base mix of bran - mix 2 cups of water, 1 teaspoon white vinegar, 2 mashed bananas and bring it to a boil. Then add 3 cups of bran. Stir and leave to cool. Add yeast and leave for 24-hours before adding flies. He states that you'll have a great culture in a week.

## NEW LITERATURE

### ATELOPIDS

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Melancon, Robb, 1996, Jewels of the rainforest. The Louisiana Gulf Coast Herpetological Society, 3(3): 2-5 (thanks Robb).

Myers, Charles W. And Böhme, Wolfgang, 1996, On the type specimens of two Colombian poison frogs described by A. A. Berthold (1845), and their bearing on the locality "Provincia Popayan." American Museum Novitates, 3185: 1-20.

Myers, Charles W., Daly, John W., Garraffo, H. Martin, Wisnieski, Anthony, and Cover, Jr., John F., 1995, Discovery of the Costa Rican poison frog *Dendrobates granuliferus* in sympatry with *Dendrobates pumilio*, and comments on taxonomic use of skin alkaloids. American Museum Novitates, 3144: 1-21.

## GENERAL

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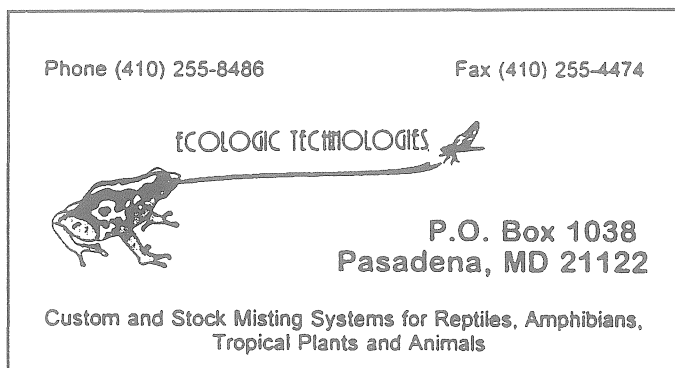
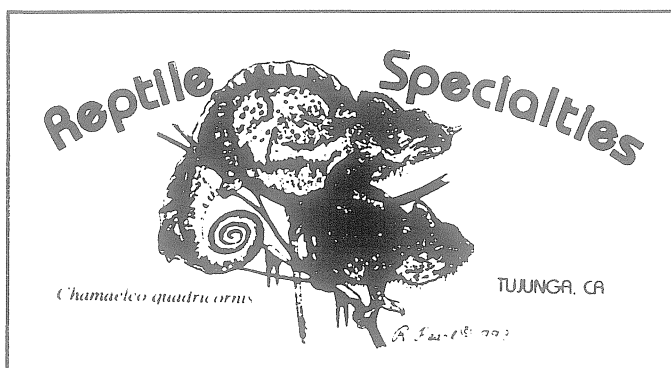
## MANTELIDS

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## ADS:

Rates for business card adds are \$10 per issue or \$50 per year. If you are interested please contact the Newsletter editor.

REPTILE SPECIALITIES (John Uhern, 7473 Foothill, Tujunga, CA 91042 Tel. (818) 352-1796; Fax (818) 353-7381) has various captive breed Dendrobatids and wild imported *Mantella* for sale. Write or call for information.



## For Sale

Ads for sale of frogs, or requests or offering of breeding loans, etc. are free to members and will run for two issues only, unless the Newsletter editor is notified.

## Special offer

*Phylllobates terribilis* 'pale metallic green' F1 babies - \$145 ea., 4 or more \$135 ea. *Phylllobates aurotaenia* 'gold/orange' F1 babies - \$110 ea., 4 or more \$100 ea. Limited number of animals from wild caught parents, imported from Germany with CITES permits will be available. Several checks have been made to assure authenticity of the animals. A very limited number of a few other species may be available. Fifty percent deposit required, balance two weeks before delivery which is scheduled for late April/early May. Direct questions to Mark Pulawski (4191 Weathered Oaks Ln., Hamilton, OH 45011. Ph. (513) 896-5809; Fax (513) 896-5901 or Charles Powell (powell2@Ave.net).

<i>Dendrobates tinctorius</i> 'large yellow form' (c.b.)	\$150 ea.	The Boa Barn
<i>Dendrobates tinctorius</i> 'white' (c.b.)	\$75 ea.	P. O. Box 123
<i>Dendrobates tinctorius</i> 'yellow back' (w.c.)	\$150 ea.	Long Green, MD 21092
		(410) 592-9674
<i>Dendrobates auratus</i> - adults c.b.	\$40 ea.	Charles Debono
<i>Dendrobates azureus</i> 'F1'	\$150 ea.	1628 Palm Ave.
<i>Dendrobates tinctorius</i> 'giant orange'	\$100 ea.	San Mateo, CA 94402
<i>Dendrobates tinctorius</i> 'Lorenzo'	\$100 ea.	(415) 570-7771
<i>Dendrobates tinctorius</i> 'white'	\$95 ea.	

<i>Dendrobates reticulatus</i> tadpoles	\$30 ea.	Melissa Gaglardo 317 SW 9th Ave. E Fort Lauderdale, FL 33312 (954) 767-6059
frogllets F1 (quantity discount available)	\$35 ea.	
<i>Dendrobates leucomelas</i>	\$35 ea.	Jenny Hackforth-Jones 1241 Sweet Briar Rd. Madison, WI 53705 (608) 233-3002
<i>Dendrobates tinctorius</i> 'cobalt,' 'giant orange,' and 'white.' and some <i>Dendrobates azureus</i> . Ted R. Kahn (P. O. Box 1375, Sterling, VA 20164-1375. Tel.: (703) 242-4543.		
<i>Dendrobates tinctorius</i> 'cobalt'	\$55 ea.	John Lewis 717 Bromley Rd. Bromley, KY 41017 (606) 344-8796 jjlewis@fuse.net
<i>Epipedobates tricolor</i> 'Moraspunga, chocolate with lime green'		
F1 offspring	\$35 ea.	
Red-eye tree frogs - F1 offspring	\$25 ea.	
<i>Dendrobates leucomelas</i> 'orange'	\$40 ea.	Anthony Leiro 402 Holly Lane Chapel Hill, NC 27514 (919) 929-3522
(5 or more for \$35 ea.)		
<i>Dendrobates tinctorius</i> 'cobalt'	\$50 ea.	
(5 or more for \$45 ea.)		
<i>Agalychnis callidryas</i> c.b.	\$25 ea.	Sandy Mascariño P. O. Box 20721 Los Angeles, CA 90006 (213) 342-0556 mascarino@earthlink.net
Marsupials	\$15 ea.	
both multiple bloodlines of both		
<i>Dendrobates azureus</i>	\$120 ea.	Jane Merkel 3407 Manhattan Ave. St. Louis, MO 63143 (314) 644-3705
<i>Dendrobates leucomelas</i>	\$40 ea.	
<i>Dendrobates reticulatus</i>	\$35 ea.	
<i>Dendrobates tinctorius</i> 'cobalt'	\$60 ea.	
<i>Epipedobates tricolor</i> 'maroon/blue'	\$25 ea.	
<i>Mantella aurantiaca</i> c.b.	\$20 ea.	Jennie Munger 75 Sunrise Hollister, CA 95023 (408) 637-0481
<i>Dendrobates auratus</i> 'Costa Rica'	\$25 ea.	Eric Pflaging Hillside Herps 220 Hillside Dr. Clermont, FL 34711 (352) 242-1616
<i>Dendrobates leucomelas</i>	\$60 ea.	
10% discount for ADG members		
<i>Dendrobates auratus</i> , metallic green netting pattern. Captive bred from unrelated stock. Extremely rare and beautiful. \$35 ea. AHP Farm, (808) 263-0762.		

<i>Dendrobates tinctorius</i> 'pallid'	\$55 ea.	Charles L. Powell
Tadpoles		2932 Sunburst Dr.
<i>Dendrobates tinctorius</i> 'pallid'	\$45 ea	San Jose, CA 95111-2264
<i>Dendrobates ventrimaculatus</i> 'Peru/yellow-orange'	\$45 ea.	(408) 363-0926
		Fax (408) 972-2182
		powell2@Ave.net
 <i>Phyllomedusa tomopterna</i>	 \$75 ea.	 Rick Russell
		19741 Woodbridge Ln.
		North Fort Myers, FL 33917
		Phone & Fax (941) 731-6592
 <i>Dendrobates tinctorius</i> 'cobalt'	 \$50 ea.	 David Ryan
	3 for \$135	3350 21st. Ave., S. W.
<i>Dendrobates tinctorius</i> 'powder blue'	\$75 ea.	Naples, FL 33964
	3 for \$200	DRyan51724aol.com
 <i>Dendrobates azureus</i> 'F1 from wild parents'	 \$150 ea.	 Jack Wattley
Tadpoles		2500 Sea Island Dr.
<i>Dendrobates azureus</i> 'F1 from wild parents'	\$100 ea.	Fort Lauderdale, FL 33301
<i>Dendrobates truncatus</i> 'F1 from wild parents'	\$75 ea.	(305) 463-5011
		Fax (305) 463-4716

#### **Wanted:**

<i>Dendrobates fantasticus</i>	Brian Lange
<i>Dendrobates tinctorius</i> 'cobalt' - female	2010A S 9th St.
<i>Epipedobates silverstonei</i>	Manitowoc, WI 54220
<i>Phyllobates aurotaenia</i>	(414) 683-1759

<i>Dendrobates fantasticus</i> - male	Charles Powell
	2932 Sunburst Dr.
	San Jose, CA 95111-2264
	(408) 363-0926
	Fax (408) 972-2182
	powell2@Ave.net

#### **Societies**

**AMERICAN FEDERATION OF HERPETOCULTURISTS.** A non-profit national membership organization of herpetoculturists, veterinarians, academicians, and zoo personnel involved in the captive husbandry and propagation of amphibians and reptiles. Membership includes the highly acclaimed Vivarium magazine, dedicated to the dissemination of information on herpetocultural accomplishments, herpetological medicine, breeding and maintenance, field studies and adventures, enclosure design and much more. Membership in the AFH is \$28.00 U.S. and \$53.00 Canadian and all other foreign countries. Contact: AFH, P. O. Box 300067, Escondido, CA 92030-0067. Tel.: (619) 747-4948; Fax (619) 747-5224.

**AMERICAN TARANTULA SOCIETY:** For enthusiasts and scientists. Forum magazine (6/yr) educational, entertaining and readable. Over 150 Accurate scientific & common names of tarantulas

and scorpions in each issue. Contact: ATS, P. O. Box 2594, S. Padre Island, TX 78597. \$15/year US, \$20 Canada, \$30 elsewhere.

**INTERNATIONAL HYLID SOCIETY:** A non-profit organization dedicated to treefrogs enthusiasts worldwide. "The Bulletin of the International Hylid Society" will be published quarterly. Membership is \$15/calendar year. For information or membership contact: William Brown, Amphibian Conservation and Research Center, 2607 Thomas Road, Valparaiso, IN 46383 USA. Tel: (219) 464-1922; e-mail: 102436.2415@compuserve.com.

**INVERTEBRATA,** This is a funny new bi-monthly bug-husbandry magazine, which, as this Newsletter editor, I can highly recommend. It covering husbandry of all sorts of bug a person might want to keep, either as pets or as food for other animals) or are interested in. It also discusses the politics affecting keeping invertebrates, and contains a wide variety of contributors, occasional photos, and is in excess of 50 pages an issue. Subscription is \$25 for six issues mailed to Mascariño, P.O.B. 20721, Los Angeles, CA 90006. (213)227-6566. E-mail: mascarino@earthlink.net. Payment made out to Mascariño.

### **CORRECTION**

My appologies to Ron Gagliardo and the Fuqua Conservatory for my misspelling both names in the article "Trial and error with *Dendrobates histrionicus*" by Ron in the last ADG issue.

### **NEW MEMBERS**

Andrew Attea (New York)  
Butch Brodie (Kentucky)  
Rob Bryan (Oklahoma)  
David Doyle (Tennessee)  
Murray Lee Eiland, III (California)  
Orlando Fuentes (Nevada)  
Rick Harmon (Iowa)  
Alex Katchuk (Wyoming)  
Steve Knott (Pennsylvania)  
Ranoma E. Kelpinski (Wisconsin)  
Wayne King (New York)  
Kevin Lingenfelter (New York)  
Scott MacDonald (New Hampshire)  
Mark McClendon (Texas)  
Robb Melancon (Louisiana)  
Daniel O'Loughlin (The Parkway Veterinary  
Hospital, Oregon)

Gary Palmer (California)  
David Primer (Michigan)  
William A. M. Reece (Texas)  
Eddy Rogers, III (VCA Kaneohe Animal  
Hospital, Hawaii)  
Rick Russell (Florida)  
Tom Stamatina, Jr. (Connecticut)  
Genie Stansbury (Washington)  
Levi Steuer (Wisconsin)  
Bill Strait (California)  
David Teague (Texas)  
John Tolbert (Pennsylvania)  
Jeff Williams (California)  
Ernest N. Willson (Pennsylvania)

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